DOCUMENT RESUME

ED 283 289 EA 019 515

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TITLE A Detailed Summary of the Oregon and Stanford Studies of Team-Organized Elementary Schools, circa 1970. Project MITT.
INSTITUTION Oregon Univ., Eugene. Center for Educational Policy and Management.
SPONS AGENCY National Inst. of Education (DHEW), Washington, D.C.
PUB DATE Aug 73
NOTE 68p.
PUB TYPE Information Analyses (070) -- Reports - Research/Technical (143)

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS Comparative Analysis; Elementary Education; *Instructional Innovation; Instructional Leadership; Interviews; *Job Satisfaction; *Multiunit Schools; *Open Education; Participative Decision Making; Professional Autonomy; Questionnaires; Research and Development Centers; Research Utilization; School Organization; *Teacher Influence; *Team Teaching
IDENTIFIERS *Collegial Teams

ABSTRACT

This report summarizes two studies conducted during the late 1960s on effects of team instructional organization upon elementary teachers' decision-making influence in educational affairs and their job satisfaction. The first study, by University of Oregon researchers, compared interview and questionnaire data from Wisconsin teachers in four multiunit schools with teachers in conventionally organized schools. Two questions were asked of the teachers: (1) Which persons, both within and outside your school, do you depend upon most heavily in order to perform your job effectively? and (2) Which persons, listed above, hold jobs so closely related to yours that the two jobs must be performed collaboratively? The main finding was the emergence of interdependence relationships in the multiunit schools, particularly among classroom teachers. The few ties that existed in conventional schools were almost exclusively between individual teachers and the principal. A Stanford group, using variables similar to the previous study, administered questionnaires to elementary teachers in eight open and in seven self-contained schools in northern California to index the chain of variable relationships. Three related variables are higher in open schools: group task-related interaction, group influence on school affairs, and teacher autonomy. The greater satisfaction found in open schools occurs among experienced teachers. This document suggests that instructional team reorganization creates bodies influencing issues normally of administrative concern and enhances teacher autonomy; job satisfaction increases primarily among emergent leadership positions. Questions remain about the importance of instructional interdependence and small-scale decision making. Tables of data appear throughout the report; 14 references are appended. (CJH)

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A DETAILED SUMMARY OF THE OREGON AND STANFORD STUDIES OF TEAM-ORGANIZED ELEMENTARY SCHOOLS, CIRCA 1970

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The research reported herein was supported in part by funds from the National Institute of Education, U.S. Department of Health, Education, and Welfare. Opinions expressed in this report do not necessarily represent the policies or positions of the National Institute of Education, nor should any official endorsement of the report be inferred from the reporting agencies.

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A Detailed Summary of the Oregon and Stanford Studies of Team-Organized Elementary Schools, Circa 1970

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August, 1973*

Two major studies completed in the last few years, both products of USOE Research and Development Centers, reached remarkably similar conclusions regarding the effects of instructional staff organization in elementary schools on the power of teachers with respect to educational affairs and on their level of work satisfaction. The findings were all the more remarkable because the studies were conducted entirely independently of one another.

In the study conducted by the Center for the Advanced Study of Educational Administration (CASEA) at the University of Oregon, comparisons were made between four Multinunit schools in Wisconsin (spawned by Wisconsin's Research and Development Center) and four control schools of a conventional variety in the same districts (Pellegrin, 1970b) while the group in Stanford's Center for Research and Development on Teaching compared teachers in eight open-space schools with those in seven conventional schools (Meyer and Cohen, 1971). Despite differences in the way in which the variables were measured, both studies showed teachers in the "experimental" schools to be higher than their counterparts in traditional schools in:

*The contents of this report were incorporated in the document entitled Management Implications of Team Teaching: Prospectus for Research by John S. Packard, Richard O. Carlson, W.W. Charters, Jr., and Richard H. Moser (Eugene, Oregon: Center for the Advanced Study of Educational Administration, University of Oregon, 1973) for submission to the National Institute of Education.

1. the extent of their task-oriented interaction with fellow teachers,
2. the extent to which control over instructional and curricular issues rested in collegial groups of teachers,
3. the extent to which teachers were influential in decisions concerning school-wide matters,
4. the level of satisfaction teachers expressed regarding their work and occupation.

While a number of other generally consistent findings were reported in the separate studies, these were the ones that specifically or closely parallelled each other.

These studies have been interpreted as lending empirical support to policy recommendations favoring the establishment of a team form of instructional organization in elementary schools and the Multiunit model in particular. If the findings are true and if team organization of teachers were widely adopted, it could profoundly alter the organizational character of the American public school and the nature of the teaching occupation itself.

Our main contention is that research findings as significant as these deserve careful scrutiny, especially as they carry the implied authority of Research and Development Center work, and warrant further investigation not only to affirm their generalizability but to answer a number of unsettled questions of importance to educational policy makers. The Management Implications of Team Teaching (MITT) Project has been designed primarily to do just that.

It is propitious, then, to describe the studies in detail, especially the CASEA study which has been reported only in scattered and sometimes unpublished sources. We have had access to the data files and documents

of the CASEA research and were able occasionally to extend the initial analyses.* In the case of the Stanford study, too, certain further analyses were carried out for this report on the basis of school-level data given in one of the sources (Brunetti, 1970). We will summarize the studies in detail, emphasizing those findings that concern shifts in the system of control of educational affairs to collegial groups of teachers. We will ask questions about the operational measures of teacher influence, about the "treatment" variable in the two studies to which differences in teacher influence and other findings are attributed, and about the alternative hypotheses, typically questioned by the authors themselves, that might account for the findings.

*Our thanks are due to Roland J. Pellegrin who put the entire contents of the study at our disposal, including personal drafts of chapters of a report he was then preparing.

A. The Pellegrin Study of Multiunit Schools

What we will call the Pellegrin study was part of a larger project on Organizational Attributes and Innovativeness of Schools (locally known as the "Attributes Project") undertaken in the spring of 1968 at CASEA. Investigators associated with the Attributes Project collected data on a variety of structural, socio-cultural, and social-psychological variables relevant to organizational analysis in over fifty elementary schools across the country, some of which had been chosen for their incorporation of particular types of innovation.

One such set consisted of schools following the Multiunit prototype, a major organizational and curricular innovation developed through the Wisconsin Research and Development Center for Cognitive Learning, and a like-number of control schools. Roland J. Pellegrin, one of the principal investigators in CASEA's Attributes Project, analyzed data emerging from the Multiunit set, and a number of reports were issued under his authorship or direction (Dudley, 1969; Dudley, Smith, & Pellegrin, 1969; Klausmeier & Pellegrin, 1971; Pellegrin, 1970a, b; Pellegrin & Stehr, 1971; Stehr, Lewis, & Pellegrin, 1969).

Selection of Contrasting Schools

Four Multiunit schools located in separate school districts in Wisconsin were identified by officials of the Wisconsin R & D Center as active participants in that Center's program of implementing the prototype, and an additional four conventional schools were selected from the same districts to serve as controls. Subsequently, one of the participating schools

(and its control) was dropped from the CASEA comparisons because it "had not sufficiently implemented the Multiunit program to justify its inclusion as a Multiunit School" (Pellegrin, 1970b). While the reports go into little detail regarding selection procedures, it is clear that the criterion of selection was a programmatic one, contrasting schools engaged in implementing Wisconsin's model with those that were not.

The Wisconsin Center's program was a broad one, and participating schools were involved in implementing a variety of innovations, both structural and curricular. Organizational innovations included the replacement of conventional grades by units, team teaching, the use of instructional and clerical aides, the introduction of the position of unit leader, creation of a faculty cabinet (the Instructional Improvement Committee, composed of unit leaders and the principal), and new linkages with external consultants. Simultaneously, curricular and instructional innovations were being introduced under the R & D Center's general concept of Individually Guided Education--the provision of enriched and flexible curriculum materials, emphasis on planning, identification of objectives, and evaluation, and so on.

Unfortunately, the research reports provide no detailed comparative information for the Multiunit and control schools, other than that they were selected in pairs from the same district and that most of the schools were in middle-income urban neighborhoods.* Also, the schools, including

*For brief sketches of the six schools, see Dudley (1969), pp. 24-29.

kindergarten, were roughly the same size: about 23 teachers, give or take a few. The control schools as a group lacked the major innovative features noted for the Multiunit schools, although several "special situations" were observed among them--occasional classroom aides assigned to teachers, at least one informal team teaching arrangement, a special ungraded class for gifted children to which three teachers were assigned, and, in one control school, attempts to innovate "in the social and technical areas" (Dudley, 1969, p. 29).

It is relevant to point out that the "experimental" schools in the study were in their initial year under the Multiunit program. Data were taken in April, 1968, only seven or eight months after beginning to implement the new system of organization and instruction.

CASEA investigators obtained data by questionnaires and interviews. Detailed and extensive questionnaires were administered to all available professional personnel in the experimental and control schools, and a majority of respondents, including the principal, the unit leaders, and half of the teachers, were interviewed in each Multiunit school. The systematic comparisons reported by Pellegrin and others, however, rely mainly on the quesionnaire responses of teachers.

Interdependence in the Work System.

Inasmuch as the Multiunit prototype calls for a change from the traditional patterns of working relationships, marked by teacher independence and isolation, to a system of teamwork and close collaboration, the CASEA questionnaire elicited teacher reports regarding the extent to which they

were dependent upon others in the performance of their duties. Two questions were asked:

> List the names of those persons both within and outside your school (other than students) upon whom you depend most heavily in order to perform your job effectively.
>
> Who are the persons listed above, if any, whose job is so closely related to yours that you believe the two jobs must be performed collaboratively in order for either of you to perform his work effectively?

The names listed by each teacher formed the basis for sociometric charts in each school and permitted tabulations of the number of interdependence "ties" among various classes of personnel.*

The main over-all finding was the emergence of interdependence relationships in the Multiunit schools, particularly among classroom teachers (Klausmeier & Pellegrin, 1971; Pellegrin, 1969). The few ties that existed in conventional schools were almost exclusively between individual teachers and the principal, but in the Multiunit schools the number of ties increased

*Pellegrin referred to the first listing of names as "dependence relationships" and the second as "essential relationships." Subsequent analyses of the teacher responses to these questions, and particularly responses to an open-ended section asking teachers to describe how the two jobs tie together, revealed that the "essential relationships" were more likely than the first listing to indicate interdependence in the instructional task itself. The first listing of names typically elicited names of persons on whom teachers were "psychologically dependent"--persons who furnished them personal support and succorance in their classroom teaching (Charters, 1973, p. 51).

in total and they shifted away from the principal to fellow teachers, including unit leaders. The average number of "essential" ties per respondent (i.e., the number of names listed in response to the second question) was 3 in the Multiunit schools and 1.5 in the controls, and the difference was due entirely to the appearance of numerous between-teacher ties, which were virtually absent in the control schools. Indeed, teacher nominations of the principal all but disappeared, except as made by unit leaders. The teacher relationships that emerged in the Multiunit schools were confined almost without exception to members of the same unit.

The sociometric charts for the Multiunit schools showed substantial differences in the development of interdependencies from one unit to the next.* Some units were devoid of "essential" relationships altogether, or, as in others, the ties occurred only among certain of the unit's teachers, leaving others unconnected. From this it would appear that a number of Multiunit teachers were still operating a program of instruction independent of the unit at the time of the study.

In some units, the "essential" relationships existed between individual teachers and their unit leaders and not among teachers themselves--a small-scale version of the pattern found in conventional schools. Findings cited by Pellegrin in an unpublished manuscript lend credence to the view that unit leaders came to serve as "little principals" of "little schools." Reporting his study of the tasks of unit leaders, Pellegrin quotes one

*Detailed charts for the six schools are in an unpublished source.

principal as saying, "Unit leaders do a lot of administrative work. They do the scheduling, run in-service training programs, supervise and evaluate the teachers, group the students, and make basic instructional decisions that I otherwise would have to make." Another principal indicated that in his school each unit is "a school within a school." While the Attributes Project data do not allow us to sort out the matter, they nevertheless suggest that "essential" relationships within units may reflect one or the other of two distinct realities: an interdependent instructional system that ties classroom teachers to one another, or a small-scale managerial system that ties independent classroom teachers commonly to a unit leader (or decision-making body).

In any event, Pellegrin's evidence indicates that a marked change occurred in work relationships in the Multiunit schools. Discounting a number of exceptions, it is clear that task interdependencies emerged among teachers in these schools centering in small collegial groups.

The Locus of Authority for Classroom Decisions.

Considerable attention was given in CASEA's Attributes Project to the identification of decision makers involved in specific decisions at the classroom level. Information was elicited by asking each teacher to describe the role he plays in the decision process with respect to five issues:

A. Choosing teaching methods used in the classroom
B. Determining the scope and sequence of subject matter content.
C. Selecting instructional materials other than textbooks.
D. Deciding on pupil promotion.
E. Scheduling daily classroom activities.

With regard to each issue, the teacher was asked to indicate his own role

vis-a-vis others according to the following check list:

a. Complete autonomy to make the decision himself.
b. Final authority to make the decision after receiving suggestions and recommendations from others.
c. Authority to make the decision within certain limits.
d. Authority to share the decision with other persons in a group or committee.
e. No voice in making the decision (i.e., the decision is made by others).

When the respondent chose any but the first alternative, he was asked to identify the other persons involved in the decision process and the positions they occupied. When alternative c was chosen, respondents were asked to describe the "limits" to which they referred. These supplementary questions were in open-ended form.

One of Pellegrin's papers (1970a) shows percentage distributions of teacher responses separately by schools and issues as well as aggregated for the Multiunit and control schools. While variations appear among both schools and issues, the general conclusion to be drawn regarding classroom-related decisions is that in the Multiunit schools decision-making authority has been shifted to the unit faculties (Pellegrin, 1970a, p. 6). Table 1 presents the data aggregated by school type.

Table 1

These data, supplemented by responses to the open-ended questions, reveal that the shift of authority to the unit faculties, when it occurred, was a composite of two distinct trajectories: (1) reduction in the discretion

TABLE 1. Teacher's Role in Instructional Decisions

Attributes Project

Percentages

Teacher's Role	Teaching Methods		Subject Content		Instructional Materials		Pupil Promotion		Daily Schedule	
	Multi-unit	Control	Multi-unit	Control	Multi-unit	Control	Multi-unit	Control	Multi-unit	Control
a. Complete autonomy.	7%	24%	3%	2%	7%	6%	4%	8%	5%	20%
b. Final authority after receiving suggestions.	34	70	17	37	35	31	19	57	3	25
c. Authority within limits.	12	6	20	40	14	38	14	31	14	55
d. Authority to share with group or committee.	47	-	54	15	41	12	53	-	63	-
e. No voice.	-	-	5	6	3	12	10	4	15	-
TOTAL	100	100	100	100	100	100	100	100	100	100

Source: Pellegrin (1970a), Tables 1-5.

that individual teachers exercise in their classroom choices and (2) reduction in the constraints imposed by agents other than their immediate teaching colleagues (from principals, district curriculum committees, central-office specialists) that normally limit their discretion in some degree. The bulk of teacher responses in the control schools either fell in the "complete autonomy" alternative, a, or in the bounded autonomy alternatives, b and c, while the largest block of responses in the Multiunit schools consistently fell in the group-shared alternative, d. The free responses following alternative d certified that the "group of committee" to which the teachers referred was, indeed, the unit faculty.

Pellegrin's report is worth quoting at length, since it captures the flavor of the differences in decision processes in the two types of school in a way that the tabular data alone cannot.

> In the control schools, there is some variation in responses for the five types of decisions. Nonetheless, we can identify the basic decision-making process that prevails. In most instances, the individual teacher makes the decisions, either alone, in consultation with the principal, or within certain limits prescribed and/or enforced by him. The teacher and the principal operate within certain limits of guidelines set by the district curriculum committee and by central office subject matter specialists. Thus both primary decision-makers--the teacher and the principal--have limits set on their discretionary authority.
>
> On the other hand, few teachers see themselves as involved in group decision-making of any kind. Our data give us a view of the school as being composed of separate, relatively isolated classrooms, with the activities of each being determined primarily by the teacher monitored to a greater or lesser extent by the principal. For the school as a whole, the principal is the central authority figure; he is the only person whose basic activities extend beyond the borders of a single classroom.
>
> In the multiunit school there are some remnants of the pattern we have just described. The key fact is, however, that the decision-making process has been fundamentally altered. The evidence is overwhelming that decision-making authority has been shifted to the unit faculty. When responses "b", "c", "d", and "e" are chosen in replies

> to the questions covered in the tables, the persons most often mentioned are the other members of one's unit. Furthermore, the characteristic response is to name all the faculty members in the unit. The principal figures much less centrally as a decision maker, advisor, or limit setter. When he is nominated, he is usually not seen as an independent authority figure, but as one of a group of persons involved in making decisions. The unit leader, similarly, is not viewed as a separate decision-making authority. Rather, he is nominated along with other members of the unit as part of the group of decision makers. The district curriculum committee and central-office specialists are nominated much less frequently in the multiunit schools than in the controls. In general, then, the evidence is that the unit faculty has emerged as dominant in the decision-making process (Pellegrin, 1970a, pp. 6, 10).

In one summary of the findings, Pellegrin was led to describe the shift in the teacher's decision-making role as a difference not just of degree but of kind. He and his colleagues proposed that teachers in conventional schools are caught up in a consultative type of authority relationship with respect to classroom decisions, implicating primarily the principal and central-office specialists, whereas Multiunit teachers characteristically are involved in a participative type of decision-making structure (Dudley, Smith, & Pellegrin, 1969).

We have not reproduced here Pellegrin's data on the separate schools, but an examination of his tables indicates that one of the Multiunit schools, School B, was an unusual case--similar neither to the other two Multiunit schools nor to the control schools in its locus of various instructional decisions (Pellegrin, 1970a, Tables 1-5). Exceptionally high proportions of School B teachers reported that they had final authority to choose their instructional materials, but unusually low proportions said they had individual discretion with respect to their methods of teaching or pupil promotion decisions. The latter issues were matters of unit decision

exclusively or, in the case of promotion decisions, out of the teachers' hands entirely. Again, it is difficult to interpret these data, but they hint at the possibility that units differ in the particular instructional issues that are brought under collegial jurisdiction; they also suggest decision structures established in schools and school systems are not necessarily homogeneous for the various kinds of classroom-related issues.

Apart from the micro-level variations, however, the Pellegrin data indicate a decided change in the locus of authority for instructional decisions in Multiunit schools. It can be characterized as the convergence of two vectors of change--one whereby teachers yield individual discretion in instructional affairs to a small collegial group, the other whereby the teachers as a group gain freedom from the bureaucratic constraints of the larger system.

Influence on School-wide Decisions.

Attributes Project researchers were concerned with decisions of school-wide import as well as those governing classroom instruction. Two empirical approaches were taken.

The first requested teachers to rate "how much influence" various parties in the school system (superintendent, principals, teachers as a group) have with regard to "how their school is run" and "how this school system is run."* Rating alternatives were:

*Additional questions concerned imputations of the superintendent's and teachers' influence on the principal's decisions and the principal's influence on teachers' classroom activities.

a. A great deal of influence.
b. Considerable influence.
c. Some influence.
d. Little influence.
e. No influence.

In the second approach, teachers were asked to mention by name persons whom they regarded as important in affecting the outcome of decisions in their school--a procedure designed to measure the school's influence structure.* The questionnaire item read:

> If you wanted to receive approval from the faculty of your school for an idea you were proposing, it would sometimes be helpful to enlist the support of certain other individuals in your school. Please list below, by name and position, the individuals whose support for your ideas would help most in obtaining faculty approval.

Tabulations were made of the frequency with which various individuals were named by the faculty, and the resulting distribution was taken to indicate the relative influence of the personnel on school policies.

In gross terms, results of the two approaches were the same. They indicated that Multiunit teachers exercised greater influence over school-wide issues than teachers in the control schools.

With regard to imputations of influence, Table 2 gives the percentage of teachers in the two sets of schools who believe that <u>teachers as a group</u> have "a great deal of influence" (alternative <u>a</u>) on how their school is run.**

Table 2

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*Pellegrin used "influence" and "power" interchangeably. We will follow his usage in this section.

**Data for the set of imputed influence questions are unpublished and available only in an uncompleted manuscript by Pellegrin.

TABLE 2. Influence of Teachers as a Group on How the School is Run.

Attributes Project.

School and Type	Per Cent Reporting "A Great Deal of Influence"
Multiunit Schools	
School A	40%
School B	72%
School C	22%
Control Schools	
School D	8%
School E	11%
School F	11%

Source: Pellegrin unpublished manuscript.

The percentages are consistently higher in the Multiunit than in the control schools. It may be significant, incidentally, that School C, where only 22 per cent of the teachers believed they had "a great deal" of school-wide influence, was also the one Multiunit school without an Instructional Improvement Committee.

Other data, not reported here, indicate that the principal, whether of Multiunit or control schools, was also seen by teachers to have substantial influence on "how the school is run." The sole exception was Multiunit School B, where relatively few teachers imputed influence to him. Also, the data show that neither principals nor teachers were regarded as having much influence on operations of the school system. Only the superintendent was universally regarded as influential in that sphere. These views were shared equally by Multiunit and control teachers.

It is probably fair to say that Pellegrin did not place high credence on teachers' reports of influence, especially as they concerned decision processes well removed from the classroom level. The wide variations in responses of teachers to the same items led him to note that his data dealt with perceptions, not facts, and to emphasize that the actual "objective situation" was differentially perceived by individuals. Also, other data he obtained showed that teachers were generally unfamiliar with official policies of their school systems and how they were reached, even when the outputs related directly to classroom activities.*

*Unpublished manuscript.

The second empirical approach, the nominations of individuals whose support would be most helpful in getting proposals accepted, focused on a level close to the classroom teacher and provided more detailed information than the first approach about distributions of within-school influence. The data document a major difference between Multiunit and control schools.

In the control schools, the principals held unchallenged dominance of the influence structure. Typically, the principal was named by almost every teacher, while no other individual in the school received even one-third or one-quarter as many nominations as he. The large majority of teachers received only one or two nominations apiece. The same strongly centralized influence structure, illustrated in Figure 1, was observed in most of the other nine conventional schools from which Attributes Project investigators obtained data.*

Figure 1

In Multiunit schools, however, the influence structure differed in several respects, depending on the school. Pellegrin observed that one generalization holds for all Multiunit schools: "the unit leaders in all instances emerge as significant persons in the influence structure

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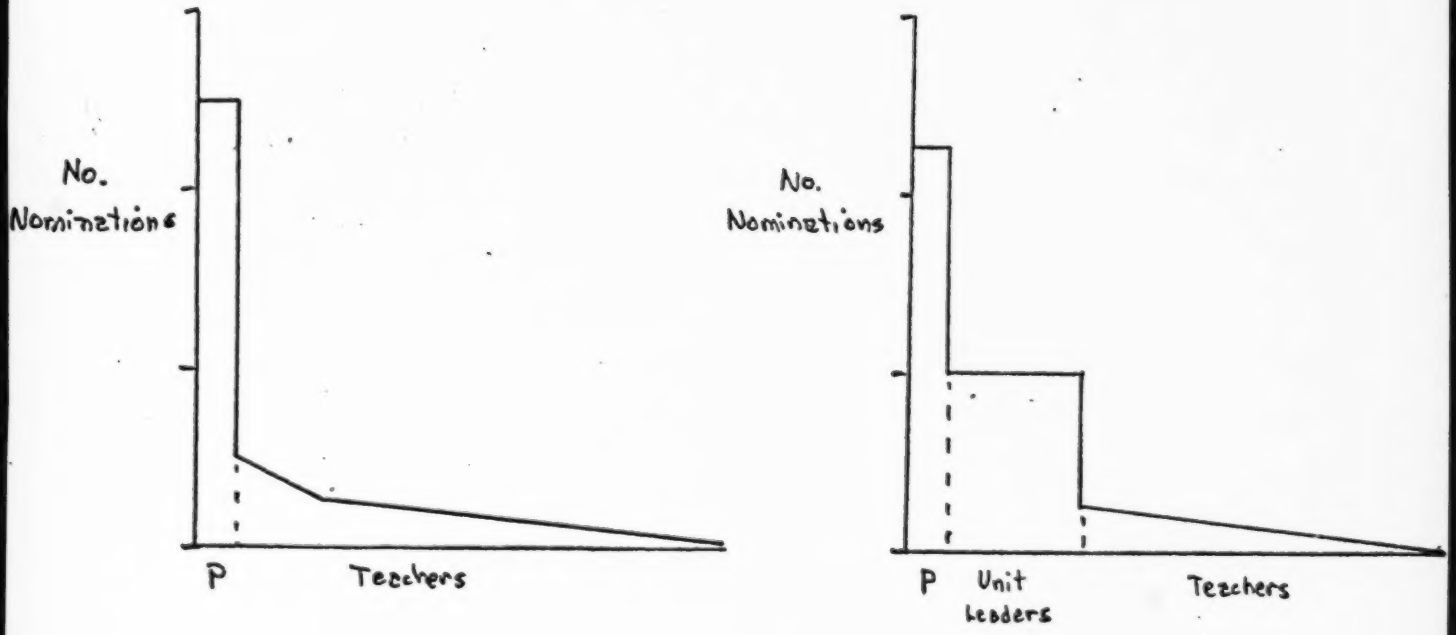
*Reported in Pellegrin's unpublished manuscript. There was one kind of deviation among the nine schools. The principal's undisputed dominance was broken in three schools where a position had been created, such as administrative assistant or vice principal, that gave its incumbent jurisdiction over the entire school or some segment of it.

Fig. 1. Schematic Influence Distributions for Conventional and Multiunit Schools.



a. Control Schools

b. Multiunit Schools

(Pellegrin, 1970b, p. 16). In two of the schools, the principal was nominated by virtually all staff members, thereby retaining his preeminence in the hierarchy, but he had to yield his monopoly on nominations to the cadre of unit leaders who, in aggregate, obtained twice as many as he. Rank-and-file teachers in these two schools, like those in the control schools, received but a sprinkling of nominations. (Figure 1b schematizes the distribution.) In the third of the Multiunit schools, School B, the principal's central place in the influence hierarchy had evaporated and influence nominations were widely dispersed across the teaching faculty. In this school, a librarian in the Instructional Materials Center received more nominations than the principal, who shared second rank with two of the three unit leaders.

Thus, the influence structure had become decentralized under the Multiunit organization, and the decentralization was such as to create a "second echelon" of influence around these teachers who were also unit leaders. In this sense, the data coincide with results of the "imputed influence" questions, which showed that teachers as a group had greater influence regarding issues of school-wide scope in Multiunit schools than in the control schools.

Pellegrin reached a major generalization from his analysis of influence structures in the whole array of elementary schools studied in the Attributes Project. Essentially, it is that, with respect to matters of school-wide import, influence attaches to positions in the formally established hierarchy.

> The conventional school, with its simple principal-teacher hierarchy, has an influence structure that is dominated by the principal. Influence is attached to the position; the principal's position confers

> influence. In some larger schools, where lesser administrative or quasi-administrative jobs exist, influence also "flows" to these positions (Pellegrin, forthcoming).

When new positions are created, and particularly positions whose jurisdictional responsibilities transcend classroom boundaries, as in the case of unit leaders, the influence structure is correspondingly altered. The connection of influence to formal position is not automatic, as the deviant case of the principalship in School B indicated;* mere position is not sufficient for the exercise of influence, but it confers great advantage. Pellegrin phrased the matter as one in which the official structure of the organization "stacks" the flow of influence in favor of occupants of distinctive official positions and mitigates strongly against the exercise of influence by rank-and-file teachers.

Instructional Improvement Committees. According to the Wisconsin plan, a new governance body, the Instructional Improvement Committee (IIC), was to be established in each Multiunit school to coordinate the instructional and curricular programs of the several units. From Pellegrin's reports on these faculty cabinets, it appears doubtful that they contributed significantly to the influence of teachers on school-wide affairs at the time of the study. It is more certain that their effects on the instructional level were slight.

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*A recent study of an elementary school implementing a differentiated staffing structure revealed that influence did not flow to officially established team leaders, but it did flow to the incumbent of a newly created quasi-line position under the principal (Charters, 1973, Chapter 6).

One of the three schools had not established an IIC. (This, however, was the Multiunit school in which fewest teachers reported that they had "a great deal of influence" over the way the school was run.) In a second school, the IIC rarely dealt with instructional problems of concern to the units and served primarily as a vehicle for channeling news to teachers.

> To put it another way, the agenda of meetings of the Instructional Improvement Committee was similar to that of general faculty meetings in a conventional school (Pellegrin, 1970b, p. 22).

The IIC in the third school apparently was more active. In it, committee members spent more time in discussions related to instruction, and,

> decisions of school-wide import made collaboratively by the principal and unit leaders affected what went on in the units (Pellegrin, 1970b, p. 15).

But the interviews showed "considerable vagueness" in the minds of the faculty in this school concerning the exact functions of the IIC. They agreed that it should "coordinate the curriculum of the entire school" but were unclear as to what this meant or how it should be accomplished.

In general, Pellegrin concluded, the IIC's had not yet emerged as important decision-making bodies, especially insofar as instructional decisions were concerned (Pellegrin, 1970a). Their precise effect in enhancing teacher influence in the school as a whole, however, is not firmly settled.

Job Satisfaction

The Attributes Project questionnaire contained ten items asking teachers about their level of satisfaction with various aspects of their work. Teachers could respond to these items as "highly satisfied," "fairly satisfied," "somewhat satisfied," or "highly dissatisfied." The items are shown in Table 3.

While the results have been reported only sketchily in the published sources (Pellegrin, 1970a; Klausmeier & Pellegrin, 1971, p. 124), they show consistent and, for some items, substantial differences indicating higher satisfaction among Multiunit teachers than control school teachers. Percentages of teachers responding "highly satisfied" are presented in the table, drawn from an unpublished source.* The differences for six of the ten items exceeded an estimate of statistical significance at the .05 level, as noted in the table.**

Table 3

Clearly, with respect to some of the items, Multiunit teachers as a group were markedly more satisfied than teachers in conventional schools.

In considering ways to account for the differences, Pellegrin (1970a) suggested a number of conditions prevailing in the Multiunit schools that potentially could enhance teacher satisfaction. We have re-ordered his list and have abstracted the key ideas.

*These percentages depart from those reported in an earlier memorandum (Charters, 1971) and in one of Pellegrin's (1970) papers. The previous percentages for Multiunit teachers had been computed with unit leaders removed, but the failure of the figures for the control schools to match is inexplicable. Our present data are partially reported in Klausmeier and Pellegrin (1971, p. 124) but come from a sheet showing the full percentage distributions distributed privately in 1969 to 1970. One minor error in the Klausmeier and Pellegrin source has been corrected.

**Pellegrin did not report significance tests nor N's. Our estimate of the difference of two proportions assumed an N of 132, equally divided between Multiunit and control schools.

Table 3. Teacher Job Satisfaction.

Attributes Project

Satisfaction Item	Per Cent "Highly Satisfied" Multi-unit	Control	Diff.
1. The progress you are making toward the goal you set for yourself in your present position.	26	15	11
2. The adequacy and fairness of school and school district policies and regulations.	44	35	9
3. The extent to which your efforts and achievements are recognized by others.	38	32	6
4. Your personal relationships with administrators and supervisors.	61	39	22*
5. The opportunities you have to accept responsibility for your own work or for the work of others.	61	43	18*
6. The ability and willingness of administrators and supervisors to give you help when you need it.	61	59	2
7. The extent to which you are able to see positive results from your efforts.	36	15	21*
8. Your personal relationships with fellow teachers.	73	55	18*
9. Your present job when you consider it in light of your career expectations.	56	39	17*
10. The availability of pertinent instructional materials and aids in your school district.	60	34	26*

*Estimated significance exceeds .05 level, two-tailed test.

Source: Unpublished tabulation.

1. Work group formation. Instead of working in isolation, the Multiunit teacher is part of a group endeavor in which close ties of cooperation and mutual aid exist among the members.
2. Support of unit leader. The unit leader's immediate availability to the teacher for assistance, advice, and consultation.
3. Relief from nonteaching chores. By virtue of (a) the presence of clerical aides and (b) the economy of effort that permits nonteaching tasks to be carried out by one person for the entire unit, Multiunit teachers can concentrate on instructional activities rather than being distracted by non-instructional routine.
4. Teacher specialization. The emergence of teacher specialization enables teachers to select duties according to their interests and talents.
5. Power equalization. The relocation of decision-making authority with respect to instructional matters in the unit faculty.
6. Innovative school effect. The teachers' global conceptions of the Multiunit setting as being more free, less rigid, and more open to experimentation.
7. Novelty effect. The new and novel work environment may produce a "Hawthorne Effect" exercising a positive influence on job satisfaction in the short run.

Given the correlation design of the Attributes Project studies, an eighth possible explanation for the differences cannot be discounted.

8. Selection factor. The possibility that high levels of teacher satisfaction pre-existed in the Multiunit schools--that the satisfaction

differential was a cause, not a consequence, of the schools' involvement in implementing the Multiunit model.

Power Equalization and Job Satisfaction: Additional Analysis

In a subsequent (unpublished) analysis, Pellegrin examined satisfaction levels among teachers in the Multiunit schools who differed in their reports on the locus of instructional decisions. At stake was the question of whether the shift in decision-making authority to the unit faculties could be responsible for the greater job satisfaction expressed by the teachers or whether satisfaction differences between Multiunit and control schools were the product of something else.

Our tabulations of Pellegrin's data are presented in Table 4. The percentages of teachers "highly satisfied" on the six satisfaction items which show strong differences between Multiunit and control schools are indicated in the table for Multiunit faculty members who report complete autonomy (alternative a in the decision-making questions), bounded autonomy (alternatives b and c), group-shared decisions (alternative d) with respect to instructional issues. These percentages represent averages over the five instructional areas on which teachers were questioned.

What Pellegrin concluded and these figures show is that the shift in locus of decision making to the group in no way accounts for differences in satisfaction levels between Multiunit and control teachers. For one thing, teachers who reported that instructional decisions were made by groups had lower satisfaction levels on most of the items than others in the Multiunit schools who reported complete or bounded autonomy in decisions. Group-

made decision did not bring high satisfaction. For another thing, the level of satisfaction of teachers in the control schools, except on Item 9, was still well below that of the Multiunit teachers who experienced the same type of autonomy, or bounded autonomy, that prevails in the conventional school. In short, the data suggest that Multiunit schools enhanced job satisfaction in spite of the shift in decision-making to the colleague group.

Table 4

The way Pellegrin had assembled the preceding data permitted another examination of the relationship between power and job satisfaction. One might expect that the teachers most advantaged by the Multiunit organization would be those appointed leaders of their units. We were able to compare job satisfaction of unit leaders and other teachers in the Multiunit schools on all ten satisfaction items. Unit leaders were not consistently higher than the remaining teachers in satisfaction level, exceeding the remainder by 18 percentage points or more on only four items (Items 2, 5, 7, and 9), and when unit leader scores are removed from the tabulations, the rank-and-file teacher's level of satisfaction was still higher in the Multiunit than in the control schools. (There were but 12 unit leaders in the schools, so the differences are not especially dependable.) Generally, it can be said that the higher satisfaction levels in the Multiunit schools

Table 4. Percentage of Multiunit Teachers "Highly Satisfied" with Their Jobs, by Reported Locus of Instructional Decisions. Pellegrin Data.*

Job Satisfaction Item	Per Cent "Highly Satisfied"			
	Group-Shared Decision	Bounded Autonomy	Complete Autonomy	Control Teachers
Personal relationships with administrators and supervisors.	56	65	81	39
Opportunities to accept responsibility for one's work or the work of others.	57	57	94	43
Seeing positive results from one's efforts.	41	45	56	15
Personal relationships with fellow teachers.	72	78	88	55
Present job in light of one's career expectations.	62	52	38	39
Availability of instructional materials and aids in district.	61	50	69	34

*Satisfaction percentages are averaged over five areas of instructional decisions on which teachers reported their mode of participation. Unit leaders are included. Job satisfaction items are those on Table 3 for which large differences were found between Multiunit and control schools.

were not simply due to the creation of a number of leadership positions whose incumbents were unusually well satisfied in their work.

Summary

Pellegrin's comparisons of the two sets of schools on teacher questionnaires of the Attributes Project indicated that the three schools seeking to follow the Wisconsin R & D Center's Multiunit School model differed from their controls in the following respects:

(a) The emergence of interdependency relationships directly among classroom teachers, and the virtual disappearance of such relationships between individual teachers and the principal.

(b) A shift in the locus of instructional decisions from autonomous classroom teachers, within limits established by the school district and enforced by the principal, to the unit faculties as collegial groups.

(c) The greater influence attributed by teachers in Multiunit schools to teachers as a group in how their school is run, along with an unchanged but high influence attributed to the principal; and the emergence of unit leaders as a "second echelon" of influence in the school, contrasting with the principal's monopolistic power in conventional schools.

(d) Higher levels of job satisfaction among Multiunit teachers, in spite of the somewhat lower satisfaction levels associated with the location of instructional decisions in collegial groups.

Close examination of certain of Pellegrin's data suggested that Multiunit

schools may have differed from their controls less in terms of the existence of highly interdependent instructional systems among teachers, as implied by the idea of team teaching, and more in terms of the existence of small-scale managerial systems centering around unit faculties and their leaders which allowed teachers to participate directly in educational decisions of their school. The Multiunit and control schools differed in other respects too, quite apart from the unit organization, which could have accounted for some of the observed differences.

B. The Meyer & Cohen Study of Open-Space Schools

A major study focusing on teachers in so-called open-space schools was conducted at about the same time as the Attributes Project Study (late 1960's) by the Environment for Teaching Program at the Stanford Center for Research and Development in Teaching. A number of dissertations and special reports have appeared on the work (e.g., Brunetti, 1970; Cohen, 1973; Leuders-Salmon, 1972; Molnar, 1971) but the prime report was authored by John Meyer and Elizabeth Cohen, and for this reason we refer to it as the Meyer & Cohen study.

Selection of Contrasting Schools

The Stanford group selected 15 elementary schools (K-6) from nine school districts in Northern California serving predominantly middle-class, metropolitan populations. Eight schools ranging in size from 9 to 19 teachers were chosen as "open" and seven somewhat larger schools (ranging from 16 to 23 teachers, except for one five-teacher school) were selected as "self-contained."*

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* Meyer & Cohen's report gives the number of schools as nine "open and eight "self-contained," for a total of 17 schools (1971, p. 15). We have used Brunetti's figures, however, since he includes an appendix table listing the schools and number of teachers (1970, p. 26 and Appendix D) and since, in all other respects, the two accounts of the sample justify. Our description of school size is based on the number of teacher respondents reported by Brunetti; no information is given regarding non-respondents.

Two criteria were used in school selection: an architectural criterion and a team organization criterion. Meyer & Cohen characterize the two types of school as follows:

> Open schools: Schools in which teachers are organized into formal work teams to plan cooperatively and to conduct instructional tasks in open instructional areas where teaching situations are not separated by floor to ceiling partitions.
>
> Self-contained schools: Schools in which teachers are formally organized to carry out instructional tasks individually and separately in self-contained classrooms.

Questionnaire responses were obtained from 110 teachers in open schools and 120 teachers in self-contained schools.

The principal interest of the Stanford group was in teachers and the "environment" impinging on them, and virtually all of their analyses involved aggregating teacher responses across all schools of a type. Individual schools did not figure as units of aggregation. As a result of this emphasis, the investigators obtained (or, at least, reported) little information regarding the nature of the educational program or general organizational characteristics in the individual schools, and it is thereby difficult to specify other ways besides formal work organization and architectural milieu in which the schools did and did not differ. Nonetheless, authors of the reports were especially sensitive to the possibility that the open schools were subject to a "Hawthorn effect" and that certain of their results could be the product of a selection factor, or the self-recruitment of teachers into schools of the two types. Between them, Meyer & Cohen and Brunetti provided anecdotal as well as questionnaire-response data emphasizing these possibilities.

We have summarized below the major ways in which the open-space schools presumably or factually departed from their more conventional counterparts, as suggested by the investigators or as indicated by their data, and that could furnish alternative explanations for some of their findings.

(a) Newness. None of the open schools had been in operation for more than 4 1/2 years (but none was selected that was in its first year). Presumably, the self-contained schools were more established.

(b) Small size. The median size of open schools was 12.5 teachers but of self-contained schools, 19 teachers (Brunetti, 1970, Appendix D).

(c) Self-recruitment of staff. In all but two open schools, teachers had to volunteer for staff positions rather than being assigned to them by the district. Presumably, staff assignments were made by the district in the self-contained schools.

(d) Youth of the staff. Questionnaire responses showed open-school staffs to be comparatively young in age and comparatively short in teaching experience.

(e) Educational orientation. Questionnaire responses indicated that open-school teachers were more concerned with individualization and child development matters in their teaching and less concerned with covering the curriculum, textbook teaching, and using the grading system than self-contained teachers. (Also, relatively few open-school teachers described themselves as "conservative" in political orientation.)*

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*Whether these differences were the consequences of work organization and architecture or the result of self-recruitment cannot be settled in the study. Meyer & Cohen regarded them as consequences. In any event, the investigators observed that open schools in their study were generally noted for their departures in philosophy, curriculum, and teaching methods.

(f) Reputation and accorded status. One of the open schools logged 2,500 outside visitors a year. The principal and one team of teachers from another school travelled extensively throughout the country organizing workshops for administrators and teachers interested in team teaching. Presumably, the self-contained schools did not attract equivalent attention or endow teachers with the same prestige.

(g) Esprit-de-corps of the open-school staffs produced by teaching in an "experimental" or "innovative" educational setting.

As noted earlier, Meyer & Cohen concentrated on several variables similar, if not identical, to those examined in the Attributes Project. They included task-related interaction (somewhat different from Pellegrin's task-interdependence variable), sources of influence on instructional decisions, sources of influence on school-wide affairs, and teacher job satisfaction. Measurement procedures were different in the Meyer & Cohen study, and in most instances these investigators contrived scale scores, or indexes, for their variables rather than relying on item-by-item analyses characteristic of the Pellegrin study.

The main burden of the Meyer & Cohen study was not just to show first-order relationships between school type and these variables but rather to specify the chain of relationships that might be expected, theoretically, to obtain among them. They developed a causal model of linkages among the variables and conducted their analyses of second-order, and sometimes third-order relationships in order to test the postulated linkages. In this respect, their analysis procedures went substantially beyond those of the Attributes Project. In other respects, too, the Meyer & Cohen study and the special projects associated with it, were more elaborate than the Attributes study, involving additional variables, measures, and theoretical frameworks. Since the Stanford reports are readily

accessible, we intend to summarize the research quite briefly and to limit our attention to those aspects of it that most closely parallel Pellegrin's study.

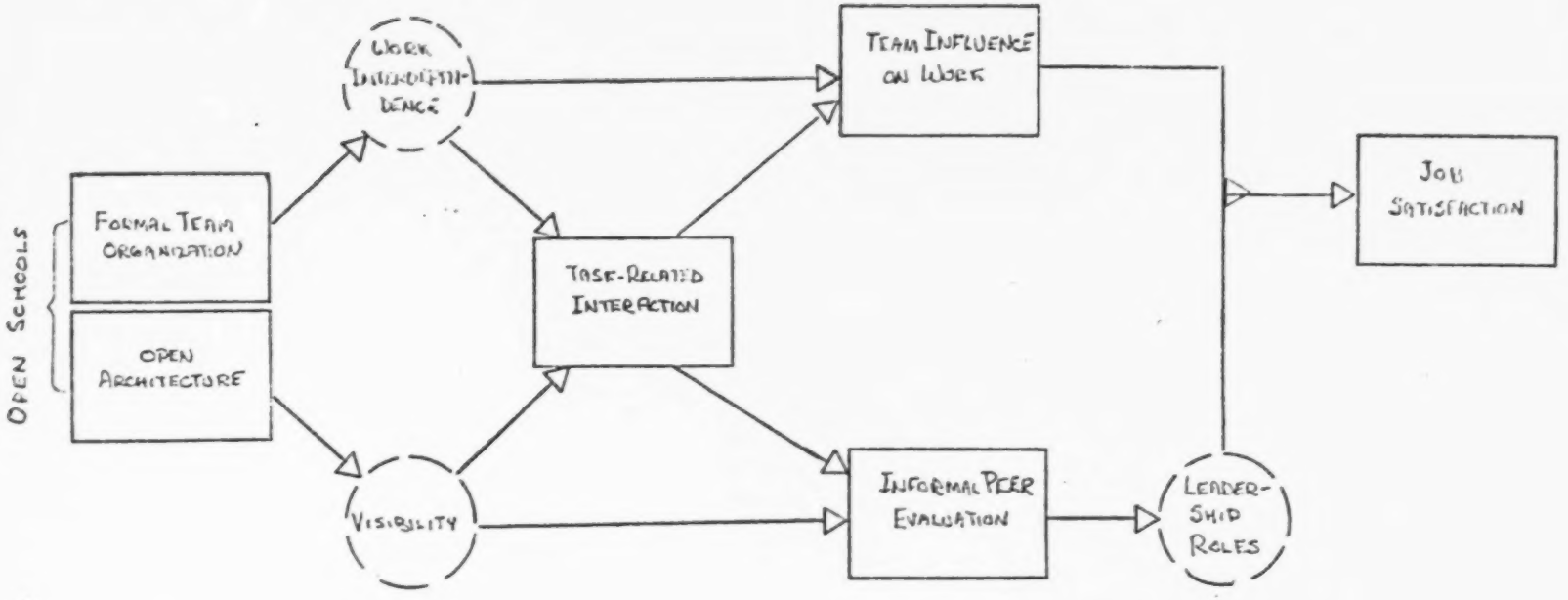
Theoretical Model

The antecedent variables in the theoretical scheme developed for the Meyer & Cohen study were the criteria for selecting the two types of school in the first place--the formal work organization and the architectural milieu of teachers. Empirically, the two were inseparably mixed in the study and their individual effects could not be assayed. Meyer & Cohen regarded the functional significance of these attributes of the so-called open schools as involving, respectively, the creation of a highly interdependent work system (or "team teaching" in educational parlance), replacing the essentially independent teaching that prevails in conventional schools, and the establishment of conditions of visibility of role performance, replacing the privacy in which teachers normally perform their roles in the self-contained classroom. Neither of these functionally translated variables, however, was directly measured in the Stanford studies. In particular, the investigators did not collect evidence in this study to certify that teachers who were formally organized in work teams did, in fact, plan their teaching cooperatively and conduct instruction jointly.

The reader is referred to Figure 2 where we have tried to reconstruct the Meyer & Cohen theoretical model. Boxes in the figure represent the key variables of the model--solid boxes for variables measured in the study and broken ones for unmeasured variables.* The causal linkages expected to hold between variables

*The labels we have given the variables in the boxes imply a "high degree or amount of the property at stake, or an "increase" in its degree or amount; in the case of variables whose mode of variation is in kind, rather than degree, we have labelled it according to one of its values. Thus, "formal team organization" implies a variable whose other value is "absence of formal team organization," just as "open school" implies a contrast with "self-contained school."

Figure 2. Meyer & Cohen's General Causal Model



Unmeasured variable

Causal relationship

are indicated by arrows. Thus, the postulated relationship between formal team organization and the creation of an interdependent work system is shown by the link labelled a, and the relationship between open-space architecture and visibility of role performance is described by the arrow labelled b.

Figure 2

Both role visibility and work system interdependence are expected to increase the amount of task-related interaction among teachers, links c and d. The emphasis in this latter variable is on task-related interaction--the communication among teachers on matters intimately associated with their work of teaching--since it is in this regard, as distinct from the more social forms of communication, that staffs of conventional schools are generally deficient. We should point out that the linkage between interdependence in the work system and task-related interaction is nearly tautological. But not entirely. While it is inconceivable that a highly interdependent teaching program could be maintained without considerable interaction and communication among teachers about their work, it is conceivable that teachers could engage in task-related interaction even in the absence of an interdependent work system. Thus, interdependence can be regarded as a necessary but not sufficient condition of high task-related communication.

Work system interdependence, along with task-related interaction, are said in turn to increase the amount of teacher influence on the task performance of their fellows, links e and f. Meyer & Cohen are not entirely clear as to whether they take "influence" in its subjective, psychological meaning--equivalent to perceptions of influence, or sense of influence--or in its objective meaning, as a description of external facts about the school's control structure. Their

measure and some of their language favors the former, but sometimes their discussion implies the latter. Again, we should point out the near tautology between interdependent teaching and teacher influence on one another's behavior; conceptually, interdependence between two parties, by definition, requires that their behavior be contingent on one another and, in that sense, be influenced by one another, and yet teacher influence on one another's performance could occur in the absence of an interdependent work system. In any event, "teacher influence" took on a broader connotation in Meyer & Cohen's discussions than simply influence over one's colleagues, meaning, rather, the influence of teachers (individually or collectively) in decisions about the instructional process generally.

The concept of teacher autonomy gets implicated in the Meyer & Cohen argument at this point. Apparently, autonomy was initially conceived by Meyer & Cohen as the converse of the influence of other teachers on one's own task performance; it meant freedom from such influence. In this view, the creation of an interdependent work system should decrease autonomy. Their paradoxical findings (that both teacher influence over their fellows and autonomy were higher in open schools than self-contained schools) led the investigators to re-examine their concept and measure of autonomy. We will postpone discussion of this until later.

Visibility of role performance not only increases task-related interaction, as already noted, but gives rise to informal evaluations of performance among teaching peers, link g. The same consequence can be expected from task-related interaction alone, link h. That is, where conditions enable teachers to see one another at work and to talk about their work, they are in a position to form judgments about one another that are based on matters directly relevant to the

teaching process itself, rather than on irrelevant or peripheral attributes (such as length of teaching experience) which commonly found judgments about peers in conventional schools.

Given a setting in which teachers are obliged to make decisions about their common (and interdependent) work and where, in the course of their interactions, they make judgments about their respective strengths, weaknesses, and unique contributions to the group task, it is reasonable to expect an informal status system to arise among them and, in particular, to see the emergence of differentiated leadership roles. This is a fundamental tenet of small-group social psychology. In Figure 2 we have designated the variable responsible for the emergence of leadership roles as informal peer evaluation, link i, although other variables in the Meyer & Cohen system undoubtedly are involved in an interactive manner. Actually, Meyer & Cohen do not treat this aspect of their argument fully and have no evidence in their monograph concerning the conditions leading to the emergence of informal leadership roles. In fact, this variable was not directly measured in the study, except by indirect proxy (see below). Molnar's (1971) report, however, pursues this general line of investigation rather extensively in connection with her observations of individual teaching teams, and the reader is invited to examine her informative findings.

An increase in the amount of teacher influence in the task performance of their colleagues (or in instructional decisions generally, as the concept came to mean for Meyer & Cohen) is expected to affect positively the level of teacher job satisfaction, link j. Thus, a participatory decision-making system is said to elevate teacher morale. As Figure 2 suggests, however, the effect of teacher influence on job satisfaction is interactive with leadership roles, link k. That is to say, the positive effect of teacher influence on morale should be

most pronounced among teachers who hold informal positions of leadership in the small work groups and less pronounced among the lower-status group members. Empirically, Meyer & Cohen indexed teacher occupancy of informal leadership positions by years of teaching experience, a rather indirect measure and one not entirely in keeping with the logic of their argument regarding the changed bases of peer evaluation in the open school.

These, then, constitute the main variables and hypothesized causal relationships of the Meyer & Cohen model. There are a few points at which we cannot testify that the model represents the investigators' a priori conceptualization, inasmuch as the discussion in their monograph reflects their reformulation of the theoretical scheme in an effort to make sense of the empirical findings--after the data were in. This is not to impugn the Meyer & Cohen work, since the development of an articulated causal model, whether before or after the fact, is an important contribution and a step well beyond the Attributes Project studies. It establishes a number of propositions explicitly that can be put to systematic test by other investigators.

In reconstructing the Meyer & Cohen theoretical model, we have tried not to stray far from the concepts and variables employed by the investigators. Except for the few we have indicated, each variable had its corresponding operational measure, but in some cases one or more supplemental measures were developed and used in the study. For example, a measure of the principal's influence on teacher task performance was used as well as a measure of the influence on teachers themselves. The supplemental measures, or associated concepts, are not incorporated in the theoretical model explicated in Figure 2, but they will be discussed shortly in connection with the empirical findings. Nor does the model touch on another class of variables that, nevertheless, takes

on considerable empirical significance in the study. This class concerns the influence of teachers and principals over school-wide decisions, directly paralleling the interests of Pellegrin in his study of the Multiunit School.

Simple Comparisons of Contrasting Schools

Let us consider, first, the simple differences between teacher responses in open and self-contained schools with respect to task-related interaction, the influence measures, informal peer evaluation, and job satisfaction, saving until later a review of the findings of the second-order analyses. As to the first-order relationships, the findings generally accorded with Meyer & Cohen's expectations and virtually duplicate many of the differences Pellegrin observed in his comparisons of Multiunit and control schools.

Task-related interaction. This variable had no counterpart in the Attributes Study questionnaire.* The Stanford group asked teachers three separate questions regarding the frequency of their informal communication about a number of topics (six of them) related to the teaching task: with other teachers, with teacher groups, and with the principal. The six task areas included (a) the educational goals and objectives of the school, (b) school rules and regulations, (c) grading students, (d) curriculum planning, (e) teaching specific lessons or classes, and (f) student discipline and control. Teachers gave one of five responses describing the frequency of communication, at least once a day, at least once a week, at least once a month, less than once a month, or never. The frequency responses were scored from 1 to 5 and summed over the six task areas and the distribution of scores was trichotomized into "high," "medium," and "low" for an over-all

*The communication variable, however, has been incorporated in subsequent CASEA studies (Charters, 1973).

index of interaction--one for each of the three types of people.

Comparisons of these indexes showed markedly higher task-related interaction with other teachers, outside of formal group meetings, and still greater interaction in teacher groups among teachers in the open schools than among those in self-contained schools. Nearly three times as many open school teachers were "high" on the index of group interaction as teachers in the self-contained schools. Insofar as informal interaction with the principal is concerned, the frequency values were exceptionally low in both types of schools and did not differ between them.

Influence over the work of the individual teacher. The Stanford questionnaire asked teachers to report the amount of influence four parties exercised over "your own...." (a) administration of school rules and regulations, (b) student grading practices, (c) curriculum planning, (d) teaching specific lessons or classes, and (e) student control and discipline practices. The degree of influence could be recorded from "a great deal," scored 1, to "none," scored 5. Teachers' scores were summed over the five task areas, as in the measure of task-related interaction, and an index was derived for each of the parties regarded as a source of influence.

One source of influence was the individual teacher, himself. Scores formed from the question, "How much influence do you have over your own...." furnished an Index of Individual Autonomy. Two other sources were other teachers as separate individuals and teacher groups ("school committees, teams, or teacher groups") and the derived indexes were called the Index of Individual Teacher Influence on the Individual and the Index of Group Influence on the Individual. The fourth source was the school principal and was called the Index of Principal Influence on the Individual.

Thus, the empirical measures of influence went beyond the single variable represented in the theoretical model. It appears that Meyer & Cohen expected inverse relationships to hold between the level of influence of other teachers (individually or collectively), on the one hand, and the individual's level of autonomy, or the principal's level of influence, on the other. That is, they seemed to view the principal, other teachers, and the self as competing sources of influence, and as one increased, the others would decline. In particular, they expected attributes of the open schools to increase the relative influence of colleagues and to decrease the principal's influence over the work of the classroom teacher as well as to decrease individual autonomy.

Meyer & Cohen report that these expectations were only partly borne out. The indexes of collegial influence were higher in the open than in the self-contained schools, especially the Index of Group Influence on the Individual; and the Index of Principal Influence was lower in the open schools, as anticipated. But contrary to expectations, the autonomy index also was higher among teachers in open than in self-contained schools, a finding that presented the investigators with a conceptual paradox. How can a teacher report that he has greater control over his own affairs when he simultaneously believes other people, particularly his colleagues, are exerting greater control over thim? A major part of a chapter in the Meyer & Cohen report was devoted to their attempt to unravel the paradox. In sum, they tentatively decided that their measure of autonomy tapped two different meanings, insofar as their respondents were concerned, and that open school and self-contained school teachers systematically differed in the interpretation they applied. Self-contained teachers, they proposed, responded to the questionnaire items in terms of their freedom from external interference, whereas those in open schools responded in terms of the

ability they had gained to control the wider resources necessary for teaching.

Care should be taken to recognize the operational difference between Pellegrin's and Meyer & Cohen's measures of teacher autonomy. Pellegrin asked teachers to report on the locus of instructional decisions, and they were given a choice between "complete autonomy" and four other alternatives, including group-shared decisions, so that autonomy would necessarily decline in frequency as other alternatives were chosen. Meyer & Cohen, on the other hand, asked teachers to rate the influence of various parties on one's own instructional behavior, including the influence of the teacher himself, and the ratings were made independently of one another. Methodologically, ratings of influence attributed to the several sources could all increase or decline simultaneously. In this regard, their measures of influence came closer to indicators of subjective responses, or "perceived influence," than to reports on the actual locations of decision, and, indeed, Meyer & Cohen came to regard their Index of Teacher Autonomy as measuring sense of autonomy and to treat it as an outcome variable similar to job satisfaction.

Later we will have occasion to report our own additional analyses of the school-by-school data provided by Brunetti (1970), which throws light on the relationships among Meyer & Cohen's influence questions and which casts doubt on the inverse relationship between collegial influence and principal influence reported by the investigators.

Influence over school-wide affairs. As noted earlier, Meyer & Cohen included in their study a set of measures of influence in school-wide operations, including (a) determining the educational goals and objectives of the school, (b) establishing school rules and regulations, (c) student grading practices, (d) general curriculum planning, and (e) student control and discipline practices.

The amount of influence attributed by respondents to individual teachers, teacher groups, and the principal was determined for the three sources separately in the five areas, using the same scoring procedures as in the influence measures reported above.

The data analyses showed that both the Index of Individual Teacher Influence within the School and the Index of Teacher Group Influence were substantially higher in open schools than in the self-contained schools, and the Index of Principal Influence was substantially lower. Again, the between-school differences were greater in the group influence than the individual influence index, suggesting that the former was the more sensitive to variations in formal staff organization.

Informal evaluation. Meyer & Cohen measured the incidence of interpersonal appraisal and evaluation, which they expected to see arising among peers as the teachers began working in intimate groups, by means of a question, "How often do you receive feedback and/or advice from other teachers about your own....." (a) administration of school rules and regulations, (b) student grading practices, (c) curriculum planning, (d) teaching specific lessons or classes, and (e) student control and discipline practices. As in the task interaction questions, response categories ranged from (1) at least once a day to (5) never, and scoring procedures were the same. They called this the Index of Informal Evaluation by Colleagues. Also, Meyer & Cohen asked identical questions regarding "feedback and/or advice" from principals, providing a parallel index of his informal evaluations.*

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*Questions about the formal evaluation practices of principals were included, too, and demonstrated that classroom observations by principals were equally rare ("once or twice a year") in the two types of school.

Open-school teachers reported much more informal evaluation of their work by their peers than did teachers in self-contained schools. In fact, twice as many open-school teachers were in the "high" evaluation category as self-contained teachers. Informal evaluation by principals, however, was relatively infrequent in both types of school and differed little between them.

The investigators asked two additional questions that went a step beyond the frequency of informal evaluations. With a slight change in wording, they sought to measure the legitimacy of peer and principal evaluation in the eyes of teachers. The question was, "Teachers in this school expect each other to make comments or suggestions about their own...." (same areas as above), then repeated for the principal. Response categories for teachers' expectations of "comments and suggestions" were (1) a great deal, (2) considerably, (3) moderately, (4) not very much, and (5) not at all.

Teachers in open schools were far more likely to accord legitimacy to "comments and suggestions" from peers than their counterparts in self-contained schools.* The majority of open-school teachers expected such evaluations from their colleagues, while the majority of teachers in the self-contained schools did not. Insofar as the legitimacy of informal evaluations by the principal is concerned, the two types of schools did not differ appreciably. Legitimacy was not especially great in either case. The upshot of the comparisons, however, was that teachers in the conventional schools accorded greater legitimacy of informal evaluations to their principal than to their colleagues, whereas the

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*This finding was confirmed by still another question in the study, which asked teachers to agree or disagree with the statement, "Colleagues have the right to evaluate each other's work."

open school situation reversed this: teachers accorded substantially greater legitimacy to the "comments and suggestions" of their colleagues than to those of the principal.

Job satisfaction. The Stanford investigators contrived a summary measure of the satisfaction teachers derive from their job and career from five items in the questionnaire form:

> How satisfied are you with your present job? (Five answer categories, ranging from "very satisfied," scored 1, to "very dissatisfied," scored 5.)
>
> How satisfied are you with teaching as an occupation? (Answer categories same as the first.)
>
> If you were offered a good job outside of education at a good salary, which did not involve such close contact with people, how likely would you be to accept? (Four answer categories, ranging from "very unlikely," scored 1, to "very likely," scored 4.)
>
> If you were offered a good job outside of education at a good salary which would involve close contact with people, how likely would you be to accept? (Same answer categories as the preceding.)
>
> If you were given the chance to go back to college days and start over, how likely would you be to choose teaching as a career? (Four answer categories, ranging from "certainly," scored 1, to "probably or certainly not," scored 4.)

Comparison of these items with those used in the Attributes Project (page , above) indicate that they focus more heavily on satisfaction with one's chosen career than on satisfaction with the immediate job situation.

In presenting their findings, Meyer & Cohen entertained two possibilities as to how they might turn out. To quote them,

> The open school clearly seems to change the work situation of individual teachers as well as the authority structure of the school. Instead of dealing with a group of students in the isolated setting of the self-contained classroom, removed from the help and scrutiny of colleagues and supervisors alike, teachers in the open school are exposed to the help, evaluation, and influence of others. These changes can be seen as making new demands on the teacher, making the job more difficult. They can also be seen as creating new sources of satisfaction (1971, pp. 49-50).

The data were congruous with the latter possibility. That is, the job satisfaction scores of teachers in open schools were considerably higher than scores of teachers in self-contained classrooms. The summary data are shown below.

TABLE 5. Job Satisfaction Scores of Teachers in Open and Self-Contained Schools (from Meyer & Cohen)

Job Satisfaction	Open Schools	Self-Contained Schools
High	46%	28%
Medium	33	36
Low	22	36
	100%	100%
(Number of cases)	(110)	(120)

Thus, despite differences in items, the Stanford group's findings with respect to job satisfaction are parallel to those reported by Pellegrin from his investigation of Multiunit schools. Indeed, in most respects, the findings of the two studies were the same.

Linkages among Variables

As reported earlier, Meyer & Cohen were concerned not just with the simple differences between open and self-contained schools on the several indexes of their study but with examining the relationships among the variables as hypothesized by their theoretical model. One of their chapters (1971, Chapter 4) delved into the matter, giving particular attention to linkages among the following five of their measures:

Task-related interaction (groups)

Informal evaluation (peers)

Teacher-group influence in school affairs.

Teacher autonomy in work

Job satisfaction

A few additional variables were examined, as well. Their mode of analysis consisted of cross-tabulating the pairs of variables separately for open and self-contained schools, thereby enabling them to establish the extent to which the expected relationships held independently of school type, the extent to which school type independently affected the variables, and whether or not the expected relationships held only in one or the other type of school.

It can be noted that the teacher autonomy variable was not among those distinguished in the theoretical model, presumably because it was expected to be the obverse of collegial influence (individual or collective) on the teacher's own work, but Meyer & Cohen singled it out for examination when autonomy turned out to be higher, rather than lower, among teachers in open schools compared with those in self-contained schools. Also, it is important to note that Meyer and Cohen used the measure of teacher group influence in school affairs in their inspection of linkages among variables rather than the influence of teachers in the task performance of their fellows, the influence variable around which the theoretical expectations were built. In fact, very few of the particular linkages in the model were directly tested in the study, although it was followed in a general sense.

The main findings regarding the interdependencies among variables can be summarized quickly.

1. The explanation of job satisfaction.
   a. Both autonomy and the influence of teacher groups on school affairs contributed independently to job satisfaction in open and self-contained schools.*
   b. Differences in job satisfaction between the two types of school could still be observed when autonomy and teacher influence were taken into account.
   c. Years of teaching experience (used by Meyer & Cohen to index "leadership roles" was strongly related to job satisfaction, but only in the open schools. Inexperienced teachers in open schools were no more satisfied with their work than teachers in self-contained schools.
   d. The amount of the principal's influence on the task-performance of individual teachers was not related to job satisfaction in either type of school.
2. The explanation of autonomy.
   a. Teacher autonomy was greater, the greater the reported influence of teacher groups on school affairs in both open and self-contained schools. The relationship was strong, and when influence was controlled, differences in autonomy between the two types of school disappeared, suggesting that the change in teacher influence fully explains the increased autonomy of Multi-unit teachers.

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*This is inconsistent with the results of analyses conducted on Pellegrin's data, reported earlier. But the different operational meanings of teacher autonomy in the two studies must be taken into account.

b. Autonomy was higher in both schools, the greater the task-related interaction and the more frequent the informal evaluation among peers. These relationships were moderate in strength.

c. Years of teaching experience was roughly related to autonomy, the more so in open schools, so Meyer & Cohen claim. (The evidence is not convincing to us.)

d. The extent of the principal's influence on the task performance of individual teachers was negatively related to teacher autonomy, but only in self-contained schools.

3. The explanation of teacher group influence on school affairs.

a. The more the task-related interaction of teachers with groups, the greater the reported influence of groups on school affairs. The relationship was strong in both types of school , but influence differences between the types persisted when task-interaction was controlled.

b. The more frequent the informal evaluation among peers, the greater the reported influence of teacher groups. This relationship was not strong.

4. The effect of task-related interaction per se on job satisfaction.

a. The task-related interaction of teacher groups was not directly associated with the level of job satisfaction in either open or self-contained schools, suggesting that whatever effects the greater group interaction of open-school teachers might have on job satisfaction would occur indirectly by enhancing the group's influence over school-wide affairs.

Thus, three of the six variables inspected by Meyer & Cohen were closely interconnected: task-related interaction of teacher groups, group influence on school

affairs, and teacher autonomy. All three, of course, were higher in open than in self-contained schools. Their data suggest that open schools increase the amount of interaction of teachers regarding their work, which, in turn, increases the reported influence of teacher groups on the school. The influence of teacher groups, however, is higher in open than in self-contained schools independently of the amount of interaction. Then, if the reported influence of teacher groups is high, teacher autonomy will be correspondingly high. High autonomy affects job satisfaction, as does the influence of teacher groups, but satisfaction is higher in open than self-contained schools regardless of these two factors. Finally, the increase in job satisfaction in the open schools occurred only among the more experienced teachers, presumably the ones who came to exercise leadership roles in those schools.

Brunetti (1970) nicely encapsulates the main thrust of the Stanford Center's findings when he speaks in terms of the difference in authority relations between the two types of school. In the self-contained schools, he says, authority relations are arranged vertically--between individual teachers and the principal--and the rights of control are vested in the principal's position, not in one's colleagues. In the open school, on the other hand, authority relations are arranged horizontally; a strong collegial control structure, oriented toward the teacher team, replaces the principal as the locus of legitimate authority. From this shift is seen to flow the greater sense of autonomy and the higher degree of work satisfaction of the open-school teachers.

This formulation of the findings duplicates almost exactly the conclusions Pellegrin drew from the study of the Multiunit School.

Interrelations of Measures: A Further Analysis

Meyer & Cohen's test of the linkages among variables, reported in the

preceding section, dealt with only a few of the measures available to them in their study. In particular, they did not fully exploit the various "influence" measures that might have thrown light on the difference in authority relations in the two types of school. Moreover, their mode of data analysis, entailing cross-tabulations of teacher responses aggregated across all schools of a type, could give only fallible answers to questions about the relations of collegial to principal authority. If it were true, for example, that as collegial influence is high in a school, the influence of the principal is relatively low, the relationship must show up when the data are inspected on a school-by-school basis; the relationship observed merely in the aggregated data could be due entirely to extrinsic circumstances.

As we indicated earlier, Brunetti's (1970) dissertation contains an appendix table in which the proportions of teachers who scored "high" on the key indexes of the Stanford study are reported for each of the fifteen schools separately. These data afford an opportunity to examine the interrelationships among the Stanford measures using the school as the unit of analysis. There were 14 indexes on which each school's standing could be determined, the main omission from the table being the job satisfaction measure. In view of the small number of teachers in each of the schools, the proportions "high" do not represent especially strong measures of school properties, but they were sufficiently stable to permit the computation of Spearman rank-order correlations among all of the indexes. One of the schools had only five teachers on which the proportions were based (a self-contained school), and it was eliminated from the analyses. The rank-order correlations, then, were based on only 14 schools.*

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*Pearson product-moment correlations also were computed and gave virtually identical results.

We should emphasize that, unlike Meyer & Cohen's, these analyses say nothing about differences between open and self-contained schools; they concern only first-order relationships among measures.

We have displayed the matrix of rank-order correlations in Table 6 in a schematic fashion to facilitate interpretation. Columns and rows have been re-arranged, and plus signs have been used to signify substantial correlations between measures, as further indicated in the table's key.

Table 6

Several major conclusions are revealed by the correlations.

1. There are two main clusterings of measures in the study--one representing the activity and influence of the principal with regard to curricular and instructional matters and the other representing the activity and influence of collegial groups in the school. Generally speaking, the clusters center around power with respect to school-wide curricular and instructional issues rather than the more intimate aspects of the individual teacher's classroom instruction; this is most clearly seen in the principal cluster.

2. The two centers of power are essentially uncorrelated. That is, the principal's power varies independently of collegial power and both may be high, or low, in a school at the same time. At least as measured by Meyer & Cohen, influence of the two is not necessarily a zero-sum game in which one party gains power only at the other's expense.

3. Collegial power is especially significant when it is located in, and legitimized by, corporate groups of teachers--"committees, teams, groups." It is revealing that the influence of teachers as separate individuals on one's own task performance (Measure #11 in the table) is unrelated to almost every

TABLE 6. Rank-order Correlations (School Scores) Among Fourteen Indexes of the Meyer & Cohen Study. Brunetti Data.*

		P.Eval.,freq. 06	P.Eval.,norm 08	P. Interact. 04	P.Infl.,Work 12	T.Infl.,Sch. 13	Grp.Infl.,Sch. 14	T.Eval.,norm 07	Grp.Interact. 03	Grp.Infl.,Work 10	T.Interact. 02	T.Eval.,freq. 05	T.Infl.,Work 11	T.Autonomy 09
P.Infl. on Sch.	15	+++	++	++	0	0	0	0	0	0	0	0	0	0
P.Eval., freq.	06		++	++	0	+	0	0	0	0	0	0	0	0
P.Eval., norm	08			0	++	0	0	0	0	+	0	0	0	0
P.Interact.	04				0	+	0	0	0	0	0	0	0	0
P.Infl. on Work	12					0	0	0	0	0	--	0	0	0
T.Infl. on Sch.	13						+++	++	++	+	0	0	0	+++
Grp.Infl. on Sch.	14							+++	+++	+++	++	++	0	+++
T.Eval., norm	07								+++	++	+++	+++	0	+++
Grp.Inter.	03									+++	+++	+++	0	++
Grp.Infl. on Work	10										++	++	+	++
T.Interact.	02											+++	0	+
T.Eval., freq.	05												0	0
T.Infl. on Work	11													0

*Computed from Brunetti, 1970, Appendix D. Spearman rank-order correlations:

+++	r	+.61	signif. at .01 level.
++	r	+.46	signif. at .05 level.
+	4	+.37	signif. at .10 level.
0			not signif.
--	r	-.46	signif. at .05 level.

(N=14)

other measure in the battery, including the frequency of task-related interaction with other teachers, the frequency of informal evaluations ("feedback and advice") among teachers, and the legitimacy of informal peer evaluations. The absence of correlations suggests that in some schools a third, highly informal locus of power may reside in a small cadre of teachers (perhaps the "old guard") who exercise it with respect to the classroom instruction of their fellows outside the context of formally responsible committees and teams.

4. Teacher autonomy, as measured by Meyer and Cohen's index, is closely associated with, or strongly promoted by, collegial power with regard to school affairs, is less associated with collegial power over the teacher's own task-performance, and is not at all associated with the principal's power. In fact, the Spearman correlation coefficients between autonomy and teacher influence in school affairs are the highest of all in the matrix--.88 for the influence of teacher groups and .90 for the influence of individual teachers on school affairs. These findings lend strong support for Meyer & Cohen's speculation with respect to the meaning of their autonomy measure, viz., that feelings of autonomy come from the teacher's ability to control the resources he needs for his teaching, but it is unnecessary to add, as Meyer & Cohen do, that teachers in self-contained schools interpret it differently--as freedom from external interference. They believed they had to include the addendum in order to explain the strong showing of teachers in the self-contained schools on the autonomy measure, but we made one further examination of the Brunetti data that indicates why it is unnecessary.

Figure 3 plots the proportions of teachers in each of the 14 schools who scored "high" on autonomy, on teacher group influence in school affairs, and on individual teacher influence in school affairs. (These, of course, were the the data on which the rank-order correlations were computed.) The graph makes

Figure 3. Profiles of Teacher Influence and Autonomy across 14 Schools: Brunelli Data.

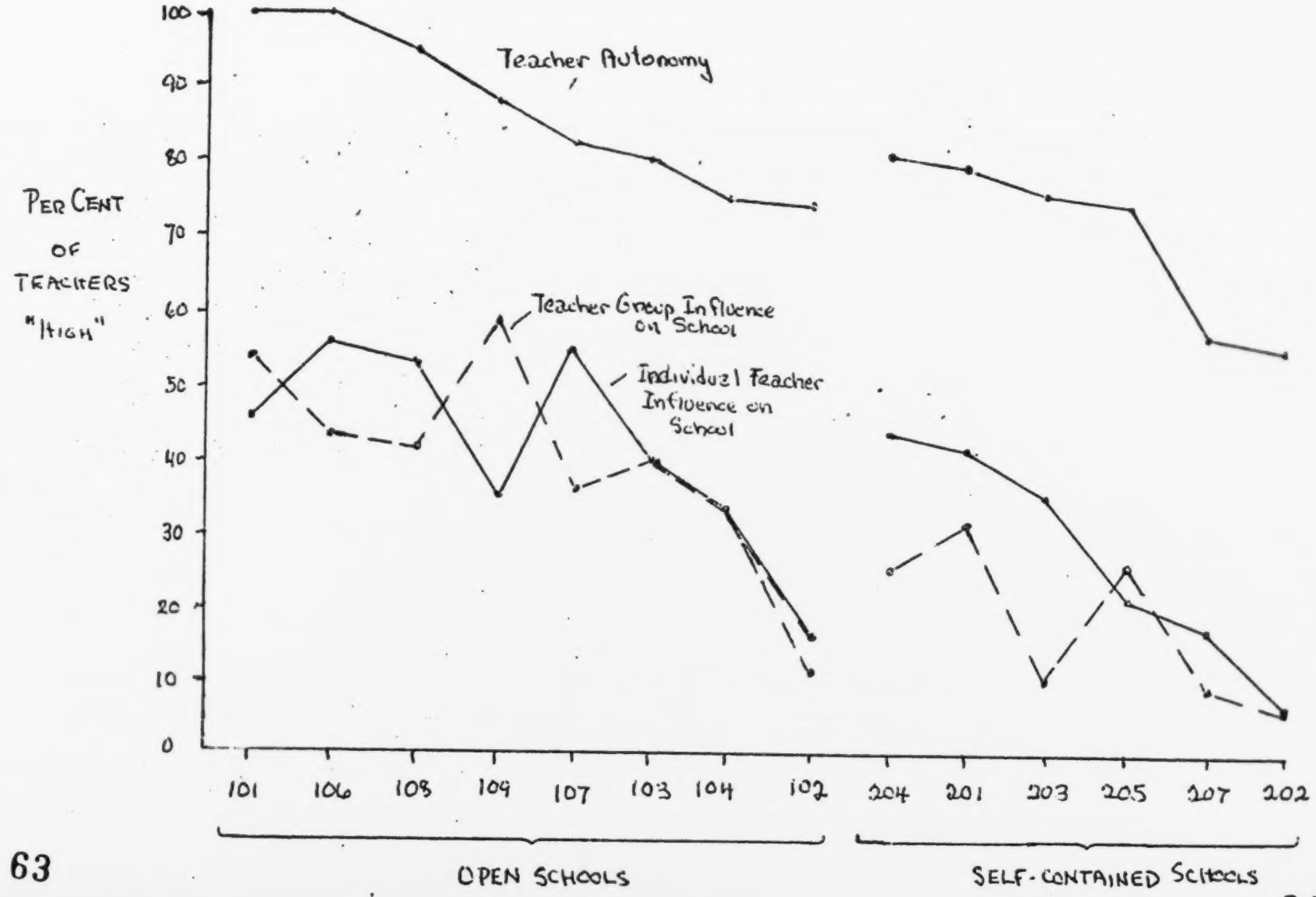

Figure 3

apparent the decline in autonomy that is associated with the decline in collegial influence, but it also shows that, in the absence of much collegial group influence in the self-contained schools, the influence of individual teachers on school affairs is the critical agent in affecting autonomy. Indeed, in these schools, the rank-order correlation between the two is perfect. In the open schools, either, or both, group or individual influence affect the level of teacher autonomy. The point of these observations, though, is that the influence of individual teachers on school affairs in three of the self-contained schools exceeds the level of individual and group influence in two of the open schools, and those three schools are ones in which teacher autonomy is comparatively high. Said differently, there are other ways besides through forming committees or teams that teachers can affect the instructional and curricular affairs at the school-wide level and thereby control the resources needed for teaching, and precisely this has happened in half of the self-contained schools.

In sum, our analyses, coupled with those of Meyer & Cohen, suggest that the chain of events associated with the establishment of open schools runs something like this. Reorganization of the teaching staff into formal work teams has the effect of creating bodies (or "units," in the Multiunit School sense) in which teachers talk about and legitimately settle instructional and curricular issues normally of concern only to the principal, if even him. These bodies come to exercise rather broad influence in the school, especially with regard to matters supportive of classroom instruction and the school's general educational program, as a result of which teachers feel they gained autonomy in their own work and

express greater satisfaction with their job and career. These formal bodies permit leadership roles to emerge, and it is primarily among the occupants of those positions that job satisfaction is enhanced.

If this formulation is correct, it raises a serious question as to whether, or in what degree, reorganization of the conduct of instruction itself is an important part of the change. Is it essential that teaching be removed from the governance of teachers in independent classrooms and assigned to a team of teachers working in a system of close interdependence in order for the effects on autonomy and job satisfaction to be realized, or is it sufficient only that new decision-making bodies be established in the school, consisting of small groups of people whose interests would be affected by the decisions they themselves made? Is the effective ingredient in the open school the creation of an interdependent instructional system, a small-scale managerial system, or both?

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